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Notes on adventive Amphipoda (*Crustacea, Malacostraca*) on the Dutch coast¹⁾

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During the last few years several persons have been paying attention to the animals transported by floating objects (e.g. bunches of weeds and hydroids, corks, mines, floats, etc.). A careful examination of recent finds increased the list of species known of nearly all groups of marine animals, found washed ashore on the Dutch coast, and gave a good notion of the origin of passively transported floating objects on our shores.

The present authors, agreeing with IJZERMAN (1937), KAAS & TEN BROEK (1939), BLOKLANDER & BROUWER (1946—'47), LUCAS (1950) and several others, in most cases look upon the Channel, the coast of Normandy and the South coast of England as their places of origin.

This opinion is supported by several facts:

- 1) Most of the material washes ashore after West or Houthwest storm.
- 2) The difference in power between the flowstream and the ebbstream causes a stream component, which is directed Northwards.
- 3) The bunches of cork, frequently found on our shores, are used by French fishermen for keeping their nets floating.
- 4) We know several species, transported by drifted material, which have a Southern range.

BLOKLANDER & BROUWER (1947), p. 94, enumerate the following typical Southern Mollusca: *Diodora apertura* (MONT.) (a Keyhole Limpet), *Gibbula umbilicalis* (DA C.), *Cantharidus exasperatus* (PENN.), *Tricolia pullus pictus* (DA C.) (the Pheasant Shell), *Trivia monacha* (DA C.) (a species of Cowrie), *Paphia aurea* (GM.) and *Lutraria magna* (DA C.).

Other invertebrate also are of more or less Southern origin, e.g. *Balanus perforatus* (BRUG.) (*Cirripedia operculata*), *Adeona heckeli* (REUSS) (Bryozoa) (vide BLOKLANDER & BROUWER l.c.). These authors at the

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same time mention the seaspider „*Ammothea laevis* (HODGE)”. The specimen, mentioned by them as *Ammothea laevis* (HODGE), was present in the Leyden Museum. It proved to be an immature female specimen of *Achelia echinata* HODGE, a species with a wide range, which is not a typical indicator of Southern origin. A rather complete list of southern species, present among the transported material washed ashore on the Dutch coast is found in LUCAS, 1950, p. 528. We can add the following names :

Amphithoe vaillanti H. LUC., *Caprella tuberculata* B. & W., *C. acutifrons* LATR. and *Lysianassa ceratina* (WALKER) (all Amphipods), *Endeis spinosa* (MONT.) (a seaspider), *Bankia fimbriatula* MOLL & ROCH (a Shipworm), and 2 other Mollusca, viz. *Modiolus barbatus* (L.) and *Haliotis tuberculata* L.

- 5) According to IJZERMAN (1937), the small pieces of rock, to which marine weeds were found attached and which were washed up between Zandvoort and Katwijk (Holland), were of southern origin. They proved to come from the coast of Normandy and the British South coast.

In addition to this southern material, occasionally some material of northern origin washes ashore. This may be explained by CARRUTHERS' well-known investigations (1925) about the direction of the currents in the North sea. The Gulf Stream is divided into 2 branches ; the smaller of which flows through the Channel and reaches the North Sea, the larger one running around Scotland and the British East Coast to the South. In the southern part of the Northsea this stream turns and joins the smaller one. The direction of the wind determines the place of this junction, which lies off the Dutch isles Vlieland and Terschelling.

The northern material contains species such as *Lacuna crassior* (MONT.), *Malletia obtusa* (SARS) and *Trophon truncatus* (STRÖM) (all of them Mollusca) and *Caprella septentrionalis* KROYER (Amphipoda), and the Isopod *Gnathia dentata* (SARS). In accordance with CARRUTHERS paper we find the northern material more frequently washing ashore on Vlieland and Terschelling.

In certain cases, depending on the direction of the wind, it might be possible for northern material, transported by the larger current after the junction with the smaller southern one, to wash ashore on the Dutch coast. Such objects should not be mistaken for southern material.

It is quite clear, that species found together with typical southern species (as listed above and by LUCAS l.c.) on the same transported object, are likewise of southern origin. In our "List of species" we shall mention such cases frequently.

Apart from northern or southern material, an important fraction of the material has its origin at a short distance from our coast. Species as *Jassa falcata* (MONT.) and *Gammarus locusta* L., which are very common in Dutch waters, are often found on floating objects.

List of species of Amphipods found on transported objects

This list contains the names of all species — known to us too — have been found on floating objects, washed up on our coast.

Substratum, number of specimens, the collection containing the material, the collector and all other data available, are mentioned.

To obtain these data, we consulted the collections of the Leyden Museum (= Rijks Museum van Natuurlijke Historie, abbreviated RML), of the Zoological Museum Amsterdam (ZMA), of the Committee on the Netherlands marine Flora and Fauna, preserved in the "Filiaal" (branch of RML, abbr. Fil.), as well as the private collections of the authors.

We are much indebted to several persons, who collected very valuable material and without whose help it would have been impossible to publish this list.

It was often necessary to dissect some specimens; they are marked with an asterisk in the list.

- 1) *Amphithoe vaillanti* LUCAS. (vide : CHEVREUX & FAGE, 1925, p. 333, fig. 341, 342)
Localities : a) 12-IV.1950. Dutch shore, between shore pole and 62 and 64, on the stapes of *Himantalia lorea* (L.) Lyngb. 1 ♂, 1 ♀. Leg. A. MULDER. Collection ZMA.
b) 2.XII.1950. Dutch shore near pole 60. On a bunch of cork. 1 ♂, juv. Leg. A. MULDER. Collection ZMA. (+)

This remarkable species is a typical indicator for material of a rather southern origin; the species is not found in the North Sea, its northern limit being the Channel.

- 2) *Aora typica* KRØYER. (vide a.o. SARS, p. 545, pl. 193; CHEVREUX & FAGE, p. 293, fig. 304, 305; STEPHENSEN, 1928, p. 310, fig. 71).
Localities : a) 19.I.49, Zandvoort, on cork. 1 ♂; Leg. J. H. STOCK. Collection ZMA.
b) 27.X.1950. IJmuiden Zuid, between hydroids, washed ashore. 1 ♂. Leg. J. H. STOCK. Collection ZMA.
c) 6.II.1951, Zandvoort, on cork. 1 ♀. Leg. J. S. M. GERRITS. Collection ZMA.
d) 6.II.1951, Dutch shore between shore pole and 66, in tubes of mud, on *Alcyonidium gelatinosum*. Leg. J. H. STOCK. Collection ZMA.

Aora typica is a widely distributed species; it is not only found on drifting objects, but it is rather common in some places on our coast.

- 3) *Caprella acanthifera* LEACH. (vide SARS, p. 666, pl. 239; CHEVREUX & FAGE, p. 446, fig. 427, 428)
Localities : a) 19.XII.1949. Dutch shore near pole 56. 1 ♂, 17 ♀♀. In cork. Leg. A. MULDER. Collection ZMA.
b) 19.I.1951. Den Helder, near pole 3. On bunch of cork. 1 ♂, 1 ♀. Leg. C. SWENNEN. Collection Fil.

Though not a typical southern species, it may be assumed, to have come from the south in both cases, for it was collected together with the seaspider *Endeis spinosa* (MONT.), which is rather characteristic for southern material.

- 4) *Caprella acutifrons* LATR. (vide CHEVREUX & FAGE and SCHELLENBERG, p. 239, fig. 200).
Locality : 22.X.1950, between Noordwijk and Noordwijkerhout, on wood, 1 ♀ males. Leg. J. A. W. LUCAS. Collection Fil.
This species is likewise an indication of the southern origin of the greater part of the objects, drifting ashore on the Dutch coast. According to SCHELLENBERG this species has once been found as an adventive on the German coast.
- 5) *Caprella linearis* (L.) (this common species is described and figured in nearly all works)
Localities : a) 28.VII.1946. Westenschouwen. On beam, 4 ♂, 1 ♀. Leg. A. BLOKLANDER. Collection Fil.
b) IX.1946. Scheveningen N. On beam. Many males and females. Leg. A. BLOKLANDER. Collection Fil.
c) 21.IX.1947. Scheveningen N. On beam. 3 ♂. Leg. J. A. W. LUCAS. Collection Fil.

- d) 20.X.1947. Wassenaarse Slag. On iron floater. 5 ♂. Leg. A. BLOKLANDER. Collection Fil.
- e) 5.XII.1947. Kijkduin. On box. 11 ♂, 1 ♀. Leg. A. BLOKLANDER. Collection Fil.
- f) 24.X.1948. Bloemendaal. On beam. Many males and females. Leg. J. H. STOCK. Collection RML.
- g) -.XII.1949. Hoek van Holland. On beam. 15 ♂. Leg. J. A. W. LUCAS. Collection Fil.
- h) 8.IX.1950. Dutch shore near pole 60. 1 ♂. Leg. A. MULDER. Collection Mulder.

Caprella linearis is very abundant in Dutch waters. Possibly, therefore, the drifting objects mentioned above originate from a short distance only. Up to now this was the only species of the genus, mentioned in Dutch literature from our coast.

- 6) *Caprella septentrionalis* KRÖYER. (Vide SARS and STEPHENSEN, 1928, 1929).
Locality: 27.IX.1948. Bosplaat (Terschelling). In eggmass of *Buccinum undatum*. 2 ♂, 1 ♀. Leg. J. H. STOCK. Collection ZMA.

It may be of great interest that this typically northern species is collected on the Isle of Terschelling (see introduction).

- 7) *Caprella tuberculata* BATE & WESTWOOD. (vide CHEVREUX & FAGE, p. 460, fig. 437 and SCHELLENBERG, p. 238, fig. 199).
Localities: a) 5.IV.1950. Dutch shore between shorepole 67 and 76. On cork. 14 ♂, 29 ♀, 14 juv. Leg. A. MULDER. Collection ZMA and Mulder.
b) 19.XI.1950. Hoek van Holland. On cork 3 ♂, 2 ♀. Leg. H. v. HAREN. Collection Fil.

This is a characteristic southern species again. It has (SCHELLENBERG) once been found as an adventive on Helgoland. There are no other from the North Sea off the Netherlands coast.

- 8) *Chelura terebrans* PHILLIPI (vide SARS, p. 627, pl. 225, and nearly all other authors)
Localities: a) 3.X.1947. Between Baklum and Heemskerk. In a beam. Leg. F. LODEIZEN. Collection Fil.
b) 19.XI.1947. Scheveningen N. In a beam. 1 ♀. Leg. A. BLOKLANDER. Collection Fil.
c) 13.IX.1949. Den Helder. In a beam, together with *Teredo navalis*. 4 ♀. Leg. C. SWENNEN. Collection ZMA.
d) 23.IX.1950. IJmuiden-Bloemendaal. In beam, together with *Limnoria lignorum* and *Limnoria quadripunctata*, ± 200 specimens (males and females). Leg. J. H. STOCK. Collection ZMA.
e) 23.IX.1950. Huisduinen. In beam, together with *Limnoria quadripunctata*. Many males and females Leg. C. SWENNEN. Collection ZMA.
f) 15.IV.1951. Near Huisduinen. In wood, ± 100 specimens (both sexes). Leg. C. SWENNEN & J. H. STOCK. Collection ZMA.

Very likely this species has often been overlooked; it does not disclose anything on the origin of the material, for it is widely distributed, both in the north and in the south.

- 9) *Corophium acherusicum* COSTA. (vide CHEVREUX & FAGE, p. 368, fig. 376).
Localities: a) -.IX.1946. Scheveningen N. On beam. Many specimens of both sexes. Leg. A. BLOKLANDER. Collection Fil.
b) 22.IX.1946. Scheveningen N. On bunch of cork. 1 ♂. Leg. A. BLOKLANDER. Collection Fil.
c) -.VII.1947. Kijkduin. 3 ♀, 1 ♂. In a cork. Leg. A. BLOKLANDER. Collection Fil.
d) 21.IX.1947. Scheveningen N. On beam. 3 ♀. Leg. J. A. W. LUCAS. Collection Fil.
e) 19.IX.1947. Scheveningen N. On beam. 5 ♀, 1 ♂. Leg. A. BLOKLANDER. Collection Fil.
f) 1.X.1948. Kijkduin-Terheyden. On weeds. 3 ♀, 1 juv. Leg. A. BLOKLANDER. Collection Fil.
g) 24.X.1948. Scheveningen N. On *Ascophyllum nodosum*. 1 juv. Leg. A. BLOKLANDER. Collection Fil.

- h) 30.IX.1948. Between Noordwijk and Noordwijkerhout. Bunch of cork 1 ♂. Leg. J. A. W. LUCAS. Collection Fil.
- i) 11.II.1949. Zandvoort. On cork. 1 ♂. 3 ♀, 1 juv. Leg. J. H. STOCK. Collection ZMA.
- j) 16.II.1949. Between Katwijk and Wassenaarse Slag. On wood. 2 ♀. Leg. J. A. W. LUCAS. Collection Fil.
- k) 11.III.1949. Between Noordwijk and Noordwijkerhout. On beam. 1 ♂, 1 ♀, 1 juv. Leg. J. A. W. LUCAS. Collection Fil.
- l) 27.X.1949. Zandvoort. On cork. 10 ♀, 5 ♂. Leg. J. H. STOCK. Collection ZMA.
- m) 11.XI.1949. Scheveningen N. On beam. 18 ♀, 1 ♂. Leg. P. LEENHOUTS. Collection Fil.
- n) 15.XI.1949. Between Katwijk and Noordwijk. On cork. 3 ♂, 3 ♀, 1 juv. Leg. J. A. W. LUCAS. Collection Fil.
- o) -XII.1949. Westenschouwen. On bunch of cork. 2 ♂. Leg. Jac. VIERGEVER. Collection Fil.
- p) 30.IV.1950. Bosplaat, pole 24 (Terschelling). Between *Tubularia* on box. 1 ♂, 1 ♀ ovig. Leg. J. H. STOCK. Collection ZMA.
- q) 8.IX.1950. Dutch shore near pole 60. On cork, 2 ♂, 2 ♀. Leg. A. MULDER. Collection ZMA.
- r) 23.IX.1950. Between IJmuiden and Bloemendaal. In beam, together with *Limnoria*. 2 ♀. Leg. J. H. STOCK. Collection ZMA.
- s) 22.X.1950. Between Noordwijk and Noordwijkerhout. On cork. 1 ♂, 10 ♀. Leg. J. A. W. LUCAS. Collection Fil.
- t) 18.XI.1950. IJmuiden Z. In cork. 1 ♀. Leg. J. H. STOCK. Collection ZMA.

This species is apparently very common on drifting material. In the sea, off the Dutch coast it either is not rare. The greater part of the floating objects on which this species was collected, may, therefore, be supposed to have their origin near our coast.

- 10) *Corophium bonelli* (M. EDW.?) SARS. (vide SARS, p. 616, pl. 221; CHEVREUX & PAGE, p. 369, fig. 377; SCHELLENBERG, p. 224).

Localities: a) 25.IV.1947. Wassenaarse Slag. In a cork. 10 ♀. Leg. A. BLOKLANDER. Collection Fil.

b) 18.X.1947. Scheveningen N. Bunch of cork. 1 ♀. Leg. P. LEENHOUTS. Collection Fil.

c) 19.X.1947. Scheveningen N. Cork. 1 ♀. Leg. A. BLOKLANDER. Collection Fil.

According to G. I. CRAWFORD (1937, Review of the Amphipod genus *Corophium* with notes on the British species. J. Mar. Biol. Ass. Plymouth, 21) this species had been confused with the following one, *C. insidiosum*.

- 11) *Corophium insidiosum* CRAWFORD. (vide CRAWFORD, l.c. and SCHELLENBERG, p. 225, fig. 183, 184).

Locality: 23.IX.1950. IJmuiden-Bloemendaal. In a beam of wood, together with *Limnoria lignorum* and *L. quadripunctata*. 10 ♀. Leg. J. H. STOCK. 9 specimens in the collections of the Zoological Museum Amsterdam. 1 ♀ in RML.

It is very interesting indeed that this species, first described by CRAWFORD in 1937, had been collected from floating objects. So far only known from more or less brackish waters, it now proves to occur also in the open sea.

There cannot be any doubt but the specimens found on our coast, belong to *C. insidiosum*. Every detail agrees with the description given by CRAWFORD.

- 12) *Elasmopus rapax* A. COSTA. (vide s.o. SARS, p. 521, pl. 183 and CHEVREUX & PAGE, p. 244, fig. 255, 256).

Localities: a) 24.X.1948. Scheveningen N. On stapes of *Himantalia lorea*. 3 ♀, 2 juv. Leg. A. BLOKLANDER. Collection Fil.

b) 26.X.1948. Between Kijkduin and Terheyden. On stapes of *Himantalia*. 2 ♂, 3 ♀. Leg. A. BLOKLANDER. Collection Fil.

c) 24.IX.1950. Huisduinen. On a stone, which had been transported by *Himantalia lorea*. 3 ♂, 2 ♀, 1 ♀ (+). Leg. C. SWENNEN. Collection ZMA.

d) 26.IX.1950. Scheveningen N. On stapes of *Himantalia lorea*. 1 ♂, 28 juv. Leg. A. BLOKLANDER. Collection Fil.

- e) 1.IX.1950. IJmuiden. On stapes of *Himantalia lorea*. 2 ♀.
Leg. J. H. STOCK. Collection ZMA.
- 13) *Euryastheus maculatus* (JOHNSTON) (= *E. erythrophthalmus* (LILLJ. = *Gammaropsis e.* LILLJ.) (vide SARS, p. 558, pl. 198; STEPHENSEN, 1928, p. 323, fig. 76; STEPHENSEN, 1929, p. 156; CHEVREUX & FAGE, p. 314, fig. 324; SCHELLENBERG, p. 193, fig. 160).
Localities: a) 24.X.1948. Scheveningse N. On *Himantalia lorea*. 1 ♂. Leg. A. BLOKLANDER. Collection Fil.
b) 24.IX.1950. Huisduinen. On a stone, transported by *Himantalia lorea*. 25 specimens, males and females. Leg. C. SWENNEN. Collection ZMA.
c) 1.X.1950. IJmuiden Z. On stapes of *Himantalia lorea*. 1 specimen. Leg. J. H. STOCK. Collection ZMA.
- 14) *Gammarus (Gammarus) locusta* L. (this species is described and figured in nearly all works).
Localities: a) 14.VII.1947. Scheveningen N. On beam. Many specimens of either sex. Leg. A. BLOKLANDER. Collection Fil.
b) 23.IX.1947. Scheveningen N. In eggmass of *Buccinum undatum*. 2 juv. Leg. A. BLOKLANDER. Collection Fil.
c) 5.XII.1947. Kijkduin. On box. 5 juv. Leg. A. BLOKLANDER. Collection Fil.
d) -.X.1948. Dutch shore, between pole 94 and 100. On bunch of cork. 11 ♂. Leg. A. B. STAM. Collection Fil.
e) 24.X.1948. Scheveningen N. On *Himantalia lorea*. 1 juv. Leg. A. BLOKLANDER. Collection Fil.
f) 28.VI.1950. Omdraai (Waddenzee). In swimming jacket. Many specimens of either sex. Leg. J. H. STOCK. Collection ZMA.
g) 15.VII.1950. Boslaai (Terschelling). 5 juv. On *Alcyonidium gelatinosum*. Leg. C. DEN HARTOG and A. MULDER. Collection ZMA.
- As stated in our introduction, this form is very abundant in Dutch waters. The drifting objects, containing this species, must, therefore, hail from nearby. We ought to make an exception for the specimen, mentioned under e). The substrate in this case (*Himantalia*) is not found attached on the Netherland coast, and must have been transported from the South.
- 15) *Gammarus (Marinogammarus) marinus* LEACH. (The species is to be found likewise in nearly all papers)
Localities: a) 23.VIII.1946. Westenschouwen. On a beam. 1 ♂. Leg. A. BLOKLANDER. Collection Fil.
b) 15.IV.1951. Scheveningen N. On cork. 1 ♀ juv. Leg. A. BLOKLANDER. Collection Fil.
- This species is not as common in the Dutch waters as *G. locusta*. Nevertheless it is possible that the beam on which this species was found, came from a short distance off the Dutch coast.
- 16) *Hyale prevosti* (M.-EDW.) (= *H. nilsoni* (RATHKE)).
Localities: This species is commonly met with, between *Fucus*, which has been washed up as here.
This species is very common in the Netherlands, between the high and low water mark. It is almost certain, that all specimens found between old seaweed, have their origin on our own coast.
- 17) *Jassa dentex* (CZERNIAVSKI) (vide SARS, p. 597, pl. 213; CHEVREUX & FAGE, p. 348, fig. 356; and others).
Localities: a) 5.IV.1950. Dutch shore, between pole 67 and 76. On cork. 1 ♂, 1 ♀. Leg. A. MULDER. Collection ZMA.
b) 1.X.1950. IJmuiden Z. On stapes of *Himantalia lorea*. 1 ♀. Leg. J. H. STOCK. Collection ZMA.
- This species has a wide distribution, hence cannot be used as an indicator for the origin of the drifting material.
- 18) *Jassa falcata* (MONT.) (vide SARS, p. 594, fig. 212; CHEVREUX & FAGE, p. 344, fig. 352, 353; STEPHENSEN, 1928, p. 342, fig. 81; STEPHENSEN, 1929, p. 162; SCHELLENBERG, p. 208, fig. 170).
Localities: a) 22.VIII.1946. Westenschouwen. On a beam. Many specimens, males and females. Leg. A. BLOKLANDER. Collection Fil.
b) 7.X.1946. Texel, pole 17. Beam. Many males and females. Leg.

- A. BLOKLANDER. Collection Fil.
- c) 21.IX.1947. Scheveningen N. On beam. Many males and females. Leg. J. A. W. LUCAS. Collection Fil.
 - d) 18.X.1947. Scheveningen N. On bunch of cork. Many specimens of both sexes. Leg. P. LEENHOUTS. Collection Fil.
 - e) 19.X.1947. Scheveningen N. Beam. Many males and females. Leg. A. BLOKLANDER. Collection Fil.
 - f) 21.X.1947. Kijkduin. On a cork buffer. Many males and females. Leg. A. BLOKLANDER. Collection Fil.
 - g) 5.XII.1947. Kijkduin. On a box. Many males and females. Leg. A. BLOKLANDER. Collection Fil.
 - h) 21.IX.1948. 's Gravenzande. Bunch of cork. Many males and females. Leg. A. BLOKLANDER. Collection Fil.
 - i) 23.IX.1948. Scheveningen N. Bunch of cork. Many males and females. Leg. A. BLOKLANDER. Collection Fil.
 - j) 27.IX.1948. Bosplaat (Terschelling). Many males and females. On basket. Leg. J. H. STOCK. Collection RML.
 - k) -X-1948. Dutch shore between pole 99 and 100. Bunch of cork. Many males and females. Leg. A. B. STAM. Collection Fil.
 - l) 3.X.1948. Between Heemskerk and Bakkum. On beam. 1 ♂. Leg. F. LODEIZEN. Collection Fil.
 - m) 24.X.1948. Bloemendaal On beam. Many males and females. Collection RML. Leg. STOCK.
 - n) 24.X.1948. Scheveningen N. On *Himantalia lorea*. 2 ♂, 4 juv. Leg. A. BLOKLANDER. Collection Fil.
 - o) 24.X.1948. Scheveningen N. On bunch of cork. Many males and females. Leg. A. BLOKLANDER. Collection Fil.
 - p) 16.I.1949. Bloemendaal. On cork. Many males and females. Leg. J. H. STOCK. Collection ZMA.
 - q) 11.II.1949. Zandvoort. On cork. 1 ♀. Leg. J. H. STOCK. Collection ZMA.
 - r) 11.XI.1949. Scheveningen N. On beam. Many specimens of either sex. Leg. A. BLOKLANDER. Collection Fil.
 - s) 13.XI.1949. Between Wijk a.Z. and IJmuiden N. Between a bunch of *Enteromorpha*. Many females. Leg. H. WIERING. Collection ZMA.
 - t) 13.XI.1949. Bloemendaal. On beam. Hundreds of males and females. Leg. J. H. STOCK. Collection ZMA.
 - u) 16.XII.1949. Scheveningen Z. Bunch of cork. Many males and females. Leg. A. BLOKLANDER. Collection Fil.
 - v) 15.I.1950. Texel, between pole 13 and 14. On cork. 1 ♀. Leg. A. C. HAZEVOET. Collection ZMA.
 - w) 5.IV.1950. Dutch shore between pole 67 and 76. On cork. 2 ♂, many ♀. Leg. A. MULDER. Collection ZMA.
 - x) 8.IX.1950. Dutch shore near pole 60. On cork. Many males and females. Leg. A. MULDER. Collection ZMA.
 - y) 9.XII.1950. IJmuiden Z. On stapes of *Himantalia lorea*. 1 ♀. Probably this species. Leg. J. H. STOCK. Collection ZMA.
 - z) 19.I.1951. Den Helder. Bunch of cork. Many males and females. Leg. C. SWENNEN. P.p. in ZMA.
 - aa) 20.I.1951. Noordwijk. On bunch of cork. 1 ♀. Leg. A. W. LA-cour. Collection ZMA.

As seen from the above list, this species is represented very frequently among the material from drifted objects. As the species is abundant in the waters, off our coast, it is possible that in a certain number of cases the origin of the material may be found there. However in a considerable number of other cases, this species was found on objects, which doubtless had their origin farther away (e.g. the cases n, y and z).

18*) *Jassa spec.* indet.

Locality: 8.I.1951. IJmuiden Z. On rubber tube. 1 ♀ juv. Leg. J. H. STOCK. Collecti ZMA.

We are not able to identify this solitary young female specimen.

19) *Leucothoe spinicarpa* (ABILDG.) (vide SARS, p. 283, pl. 100, 101; STEPHENSEN, 1928, p. 155, fig. 29; STEPHENSEN, 1929, p. 92; CHEVREUX &

- FAGE, p. 122, fig. 118, 119; SCHELLENBERG, p. 125, fig. 103, 104).
Locality: Scheveningen Z. 6.XII. 1949. 1 ♀. 1 juv. Leg. A. BLOKLANDER. Collection Fil.
This peculiar species is distributed throughout the Atlantic. It does not give us data about the origin of the drifting objects.
- 20) *Lysianassa ceratina* (WALKER) (vide CHEVREUX & FAGE, p. 42, fig. 23).
Locality: 21.I.1951. Dutch shore, between pole 58 and 59. On a mine. 4 ♀, 2 juv. (1 ♀ +) Leg. J. S. M. GERRITS. Collection ZMA.
Without any doubt, this species is a characteristically southern one. This means an addition to the list of species known from the Dutch shore.
- 21) *Orchomenella nana* (KRØYER) (vide SARS, p. 69, pl. 25, CHEVREUX & FAGE, p. 71, fig. 62; STEPHENSEN, 1928, p. 70, fig. 10; STEPHENSEN, 1929, p. 60; SCHELLENBERG, p. 180, fig. 85).
Localitu: 28.VII.1950. IJmuiden N. In a dead *Carcinides maenas*. Many males and females. Leg. J. H. STOCK. Collection ZMA.
It is dubious whether this species belongs to this list, a dead crab not being a drifting object. For the sake of completeness, however, this form is added.
- 22) *Phtisica marina* SLABBER. (vide SARS, p. 646, pl. 223, and nearly all other authors).
Localities: a) 23.X.1948. Scheveningen N. 1 ♂, on cork. Leg. J. v. NIEL. Collection Fil.
b) 24.X.1948. Scheveningen N. 1 ♀. On *Himantalia lorea*. Leg. A. BLOKLANDER. Collection Fil.
This easily recognizable species has a wide range, being neither typically northern nor southern.
- 23) *Platycyamus thompsoni* GOSSE
Locality: 181.XI.1931. Waarde (Zeeland), on *Hyperoodon rostratus*. Leg. W. E. DE JAGER. Collection ZMA. Identification Prof. SCHELLENBERG.
We can make the very same remarks as under no. 21.
- 24) *Pleonexes gammaroides* BATE (vide SARS, p. 582, pl. 207; CHEVREUX & FAGE, p. 335, fig. 344; STEPHENSEN, 1928, p. 336, fig. 80).
Localities: a) 24.X.1948. Scheveningen N. Bunch of cork. 1 ♂, 2 ♀, 1 juv. Leg. A. BLOKLANDER. Collection Fil.
b) 19.I.1951. Between Zandvoort and Bloemendaal. In egg capsule of *Buccinum undatum*. 1 ♀ juv. Leg. J. H. STOCK. Collection ZMA.
c) 19.I.1951. Between Zandvoort and Bloemendaal. In a chink of a cork. 1 ♂, 4 ♀. Leg. J. H. STOCK. Collection ZMA.
For this species, the same remarks apply as for no. 22.
- 25) *Podocerosia nitida* (STIMPSON) (vide SARS, p. 576, pl. 205; CHEVREUX & FAGE, p. 317, fig. 326; STEPHENSEN, 1928, p. 326, fig. 77; STEPHENSEN, 1929, p. 157; SCHELLENBERG, p. 194, fig. 161).
Locality: 28.V.1950. IJmuiden Z. In a shell, together with *Pagurus bernhardus*. 1 ♂, 20 ♀, 12 juv. Leg. J. H. STOCK. Collection ZMA.
It is curious, that both CHEVREUX & FAGE and SCHELLENBERG found this species in or on shells with *Pagurus*!
- 26) *Sunamphithoe pelagica* (H. M.-EDW.) (vide SARS, p. 585, pl. 208; CHEVREUX & FAGE, p. 340, fig. 348, STEPHENSEN, 1928, p. 337, fig. 80).
Localities: a) 24.X.1948. Scheveningen N. On *Ascophyllum nodosum*. 1 ♀. Leg. A. BLOKLANDER. Collection Fil.
b) 23.IX.1950. Huisduinen. On a stone, transported by *Himantalia lorea*. 1 ♀. Leg. C. SWENNEN. Collection ZMA.
This species is widely distributed, cf. remark in no. 22.

Conclusion: In the above list we summarize our knowledge about the Amphipods found on floating objects washed ashore on the Dutch coast.

A considerable number of species had not been found before in the Netherlands, viz. no. 1, 3, 4, 6, 7, 11, 12, 13, 17, 19, 20, 23, 24 and 26.

We can indicate only one species which points to a northern origin of the floating material (no. 6); more species are characteristic for southern material. (viz. no. 1, 4, 7, 20). The remaining species have a wide distribution and do not give us any indication as to the origin.

Further investigation may prove the number of specimens of each species as well as the number of species washed ashore to be even considerably greater.

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Photomechanical reproduction